CLAIMS

1. A process for the treatment of fluids originating from submarine oil fields, performed on board of floating units, comprising the following stages:

- delivering the fluid from the field to a high pressure gas/liquids separation stage (S-HP), where it is split into a gas phase substantially consisting of light hydrocarbon gases, and two liquid phases one of which mainly consists of water, the other substantially of hydrocarbon liquids;
- delivering the light hydrocarbon gases, separated in the high pressure separation stage (S-HP), to a reinjection gas compression unit (C-HP) having at least two compression stages;
- delivering, after heating, the hydrocarbon liquid separated in the high pressure stage of separation (S-HP) to one or more further stages of gas/liquids separation operating at decreasing pressures (S-IP and/or S-LP), where, in each stage, the liquid is split into a gas phase essentially consisting of light hydrocarbon gases, and two liquid phases one of which mainly consists of water, the other mainly of hydrocarbon liquids;

- delivering to a water treatment section the water separated both in the first high pressure separation stage (S-HP) and in the decreasing pressures separation stages;
- delivering the light hydrocarbon gases, which have been separated in the decreasing pressure separation stages to the corresponding compression units called "Flash Gas Jet Compression" (FGJC) to recompress said gases,

characterized by the fact that to recompress said gases in said compression units (FGJC) ejectors are employed, which use the compressed gas exiting from one of the compression stages of the reinjection gas compression unit (C-HP) as the driving fluid of each single ejector.

2. The process, according to claim 1, where the driving fluid of each single ejector is the compressed gas exiting from the second-last or from the last compression stage of the reinjection gas compression unit (C-HP).

3. The process, according to claim 1, where the further decreasing pressure gas/liquids separation stages are in number of two, one at intermediate pressure (S-IP) and one at low pressure (S-LP).

4. The process, according to claim 3, where the driv-

ing fluid of the ejector of the compression unit (FGJC-IP) of the hydrocarbon gas separated in the intermediate pressure stage (S-IP) is the compressed gas exiting from the last stage of the reinjection gas compression unit (C-HP).

5. The process, according to claim 3, where the driving fluid of the ejector of the compression unit (FGJC-LP) of the hydrocarbon gas separated in the low pressure stage (S-LP) is the compressed gas exiting from the last stage of the reinjection gas compression unit (C-HP).

6. The process, according to claim 1, where each stage of compression of the reinjection gas compression unit (C-HP) comprises at least a biphasic separator to remove liquid particles, a compressor and a heat exchanger to cool the compressed gas.

7. The process, according to claim 6, where the compressed gas to be used as driving fluid is taken below the compressor (C-HP).

8. The process, according to claim 7, where the compressed gas to be used as driving fluid is taken below the compressor (C-HP) before the cooling heat exchanger.

9. The process, according to claim 1, where the reinjection gas compression unit (C-HP) has three com-

pression stages.

10. The process, according to claim 1, where the last stage of separation at decreasing pressures is performed at sub-atmospheric pressure.

11. The process, according to at least one of the claims from 1 to 10, where the recompressed gases exiting from the compression units (FGJC) are used as fuel gases.

12. The process, according to at least one of the claims from 1 to 10, where the recompressed gases exiting the compression units (FGJC) are sent to the reinjection gas compression unit (C-HP).

13. A floating production unit characterized by the fact of containing a treatment system for the fluids originating from oil fields comprising a high pressure separator (S-HP) and at least a second lower pressure separator (S-IP or S-LP), one reinjection gas compression unit (C-HP) having at least two compression stages and at least a compression unit called "Flash gas Jet Compression" (FGJC) equipped with a suitable ejector.

14. The process, according to at least one of the claims from 1 to 12, characterized by the fact of being performed in a floating production unit according to claim 13.